

U.S. Serial No.: 10/652,314
Amendment Under 37 C.F.R. §1.111 dated September 24, 2004
Response to the Office Action of June 24, 2004

REMARKS

This is in response to the Office Action dated June 24, 2004. Claims 1 – 20 remain pending in the present application. Claims 18 – 19 were withdrawn from consideration. The rejections set forth in the Office Action are respectfully traversed below.

The Specification

The specification has been amended to correct some minor typographical errors in the specification.

Claim Objections

Claim 20 is objected under 37 C.F.R. §1.75(c) as being of improper dependent form for failing to further limit the subject matter of the previous claim. Claim 20 has been amended into independent form. Withdrawal of the objection of claim 20 is respectfully requested.

Rejections Under 35 U.S.C. §103

Claims 1 – 17 and 20 are rejected under 35 U.S.C. §103(a) as being unpatentable over **Suenaga et al.** (USP 6,569,696) in view of **Anai et al.** (USP 6,459,208).

(1) Regarding claims 1 – 15 and 20.

The Office Action asserted that **Suenaga** discloses the step of thermal processing allegedly being performed in a dehumidified atmosphere.

However, the atmospheric air disclosed in **Suenaga**, in which the step is performed, has a nature completely different from the dehumidified atmosphere in the present invention according to claim 1 as discussed below.

It is described in **Suenaga** that an atmospheric air adjusted to a predetermined temperature and humidity is supplied to a plant by an external control unit including a humidity control section, the air enters a clean room provided in the plant through fan filter units, and a part of the air in the clean room flows into an application and development apparatus. Thus, in **Suenaga**, wafers are heated as a pretreatment in the atmospheric air which enters from the clean room into the application and development apparatus, and whose humidity is adjusted or controlled. The extent of the humidity adjustment is not described at all in **Suenaga**. Accordingly, **Suenaga** only discloses that the atmospheric air is adjusted to a predetermined humidity, but does not disclose the atmospheric air being dehumidified. **Suenaga** fails to disclose the dehumidified atmosphere in which the step of thermal processing is performed.

Furthermore, the present invention according to claim 1 has the technical feature that the step of thermal processing to the step of making the substrate surface hydrophobic are preformed in a dehumidified atmosphere, while the step of applying the resist is performed in an atmosphere having a higher humidity than the dehumidified atmosphere.

By performing the step of thermal processing to the step of making the substrate hydrophobic in the dehumidified atmosphere, the generation of foreign substances on the surface of the substrate can be suppressed. On the other hand, the atmosphere in which the resist is applied has a higher humidity than the dehumidified atmosphere. In other words, the atmosphere

in which the resist is applied has a suitable amount of water. By applying the resist in an atmosphere containing a suitable amount of water, the resist film can be formed in a uniform thickness.

The present invention according to claim 1 realizes both effects of suppressing the generation of foreign substances and forming the resist film in a uniform thickness by differentiating the humidity of the atmospheres in a series of the steps. In contrast, **Suenaga** and **Anai** do not disclose nor suggest the difference in the humidity between the steps of the pretreatment including thermal processing and the resist application.

Accordingly, even if **Suenaga** were combined with **Anai**, the present invention according to claim 1 and its direct or indirect dependent claims 2- 15 is not obvious to one of ordinary skill in the art at the time the invention was made. Claim 20, reciting substantially similar features as claim 1, also distinguishes over the prior art, either alone or in combination, for the same reasons.

(2) Regarding claims 16 and 17

Both **Suenaga** and **Anai** fail to disclose the range of the temperature of the substrate recited in claim 16. The Examiner seems to regard the range of the temperature in claim 16 as a matter of determining optimum process condition by routine experimentation, though the Examiner does not directly address this point regarding claims 16 and 17.

However, the range of the temperature of the substrate described in claim 16 cannot be reached by a simple optimization for process condition since the range of the temperature described in claim 16 represents the temperature range which permits the prominent suppression

U.S. Serial No.: 10/652,314

Amendment Under 37 C.F.R. §1.111 dated September 24, 2004

Response to the Office Action of June 24, 2004

of the generation of the foreign substances originated from the hydrolysis of the hydrophobic processing material. Only with recognition of the problem related to the foreign substances originated from the hydrolysis of the material, the range of the temperature of the substrate in claim 16 can be determined.

Accordingly, the combination of **Suenaga** and **Anai**, both lacking in the recognition of the problem related to the foreign substances originated from the hydrolysis, cannot lead to the temperature range described in claim 16 even if optimization for process condition is performed. Thus, the present invention according to claim 16 and its dependent claim 17 is not obvious to one of ordinary skill in the art at the time the invention was made.

For at least these reasons, the present claimed invention patentably distinguishes over the prior art and it is respectfully requested that these rejections be withdrawn.

If, for any reason, it is felt that this application is not now in condition for allowance, the Examiner is requested to contact Applicants undersigned attorney at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

U.S. Serial No.: 10/652,314

Amendment Under 37 C.F.R. §1.111 dated September 24, 2004

Response to the Office Action of June 24, 2004

In the event that this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. Please charge any fees for such an extension of time and any other fees which may be due with respect to this paper, to Deposit Account No. 50-2866.

Respectfully submitted,

WESTERMAN, HATTORI, DANIELS & ADRIAN, LLP



John P. Kong
Attorney for Applicants
Registration No. 40,054

JPK:kal

1250 Connecticut Avenue, N.W.

Suite 700

Washington, D.C. 20036

Telephone - (202) 822-1100

Facsimile - (202) 822-1111

Q:\2003\031098\Filings\1.111 Amendment - September 2004.doc